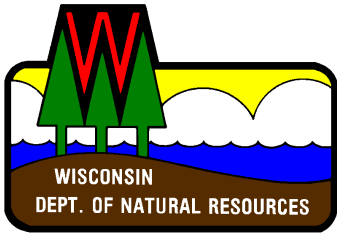


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# *Mercury Rules Status Report to the Natural Resources Board*

September 2002

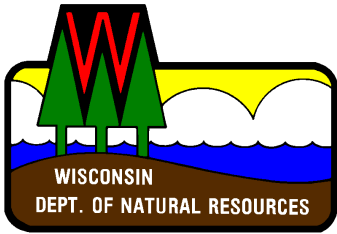
Jon Heinrich, Bureau of Air  
Management



## *Issues for Today's Briefing*

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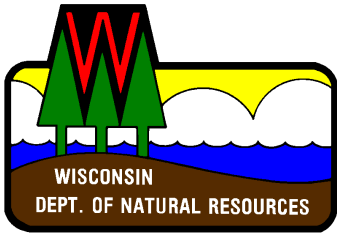
1. Summary of concerns received during the public comment period on the proposed rules.
2. Mercury Citizen Advisory Committee process and report.
3. Recent research findings and new research initiatives.
4. Monitoring mercury trends in the environment.
5. Mercury control technology update.
6. Federal actions to limit mercury emissions from electric utilities.



## *Public Comment*

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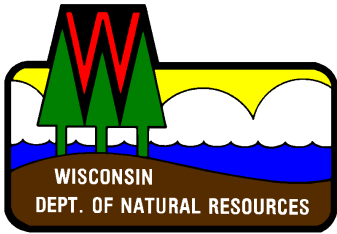
- Determining reduction baseline.
- Interaction between a state regulation and federal requirements.
- Timing and content of periodic evaluations.
- Reliability impacts.
- Industry responsibilities.
- Addressing growth in mercury emissions.
- Schedule and amount of major utility reductions.
- Trading provisions.
- Effect of mercury reductions.



## *Citizen Advisory Committee*

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- Stakeholders' viewpoints remained consistent throughout process (nobody changed their minds).
- Committee members tried to identify ways to reach consensus with limited success.
- The committee report documents dialogue, highlights key issues and provides a forum for members to express their views.
- Complete report is available on Department mercury rule web page.



## *Recent Research Findings*

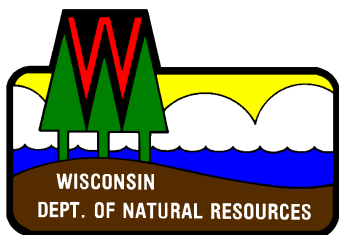
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- Common Loon Studies - Dr. Michael Meyer

Study results to date are inconclusive with respect to whether current mercury exposure levels have negative effects on chick health.

- Little Rock Lake - Dr. Carl Watras

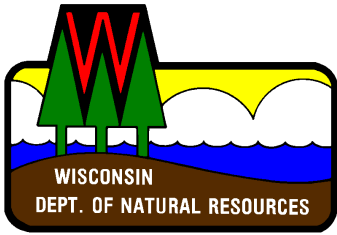
Preliminary findings indicate that lakes may respond more rapidly to changes in atmospheric deposition of mercury than the decline in acidity from the reduction sulfur dioxide emissions.



# *Little Rock Lake Response Summary*

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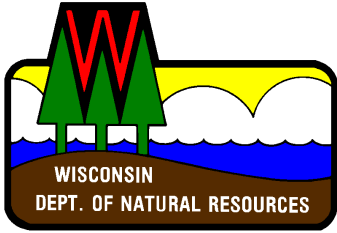
	<b>Time Period</b>	<b>Average Rate of Change (% per year)</b>
<b>Atmospheric Sulfate Deposition</b>	<b>1988-2000</b>	<b>-4</b>
<b>Lake Water Sulfate Concentration</b>	<b>1988-2000</b>	<b>-5</b>
<b>Atmospheric Hg Deposition</b>	<b>1995-1999</b>	<b>-10</b>
<b>Lake Water Hg Concentration</b>	<b>1995-1999</b>	<b>-5</b>
<b>Yellow Perch Hg</b>	<b>1994-2000</b>	<b>-5</b>



## *Research Initiatives and Studies*

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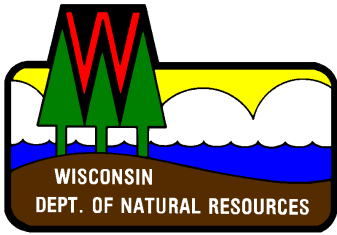
- Modeling the fate of mercury in products.
- Atmospheric Modeling System
- Quantify Dry Mercury Deposition
- Fate and Transformation Study - Source to Receptor
- EPRI - mercury chemistry in power plant plumes.
- River Otters



## *Monitoring Mercury Trends in the Environment*

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- Mercury air deposition monitoring network.
- Mercury trends analysis for select fish species.



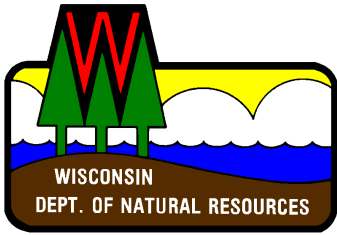
## *Control Technology - Timing, Level & Costs*

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- Utility Overview

- ⇒ sub-bituminous coal use predominates - less mercury content and more difficult to control than bituminous coal.
- ⇒ Major Utilities: Large Units > 200MW 13 & Small Units < 200MW 24

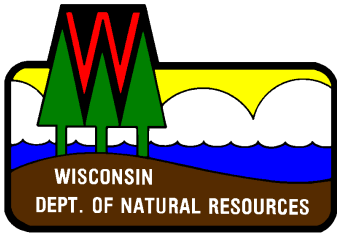
- Control Evaluation - 2 to 3 years for final work on options that currently exist and to establish whether emerging technologies have promise.
- Control Installation - 2 to 3 years for installation on large units. Stagger installation if several units involved to protect reliability.



## *Control Technology - Timing, Level & Costs*

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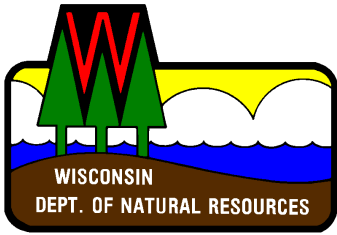
- WE Pleasant Prairie full scale test involving injection of activated carbon had success at reducing mercury, however fly ash became unusable.
- The addition of a new fabric filter with carbon injection would minimize fly ash contamination at more cost than injection alone.



## *Control Technology - Timing, Level & Costs*

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- Surrogate Technology - Activated carbon injection and new fabric filter for mercury control.
  - ⇒ 13 large units - 72% reduction at increased rate payer cost of \$15 to \$18 per year (1.7 to 2.2% increase).
  - ⇒ 24 small units - 18% reduction at increased rate payer cost of \$5 per year (0.55% increase).
- Compliance Margin - 50% requires 55% reduction.



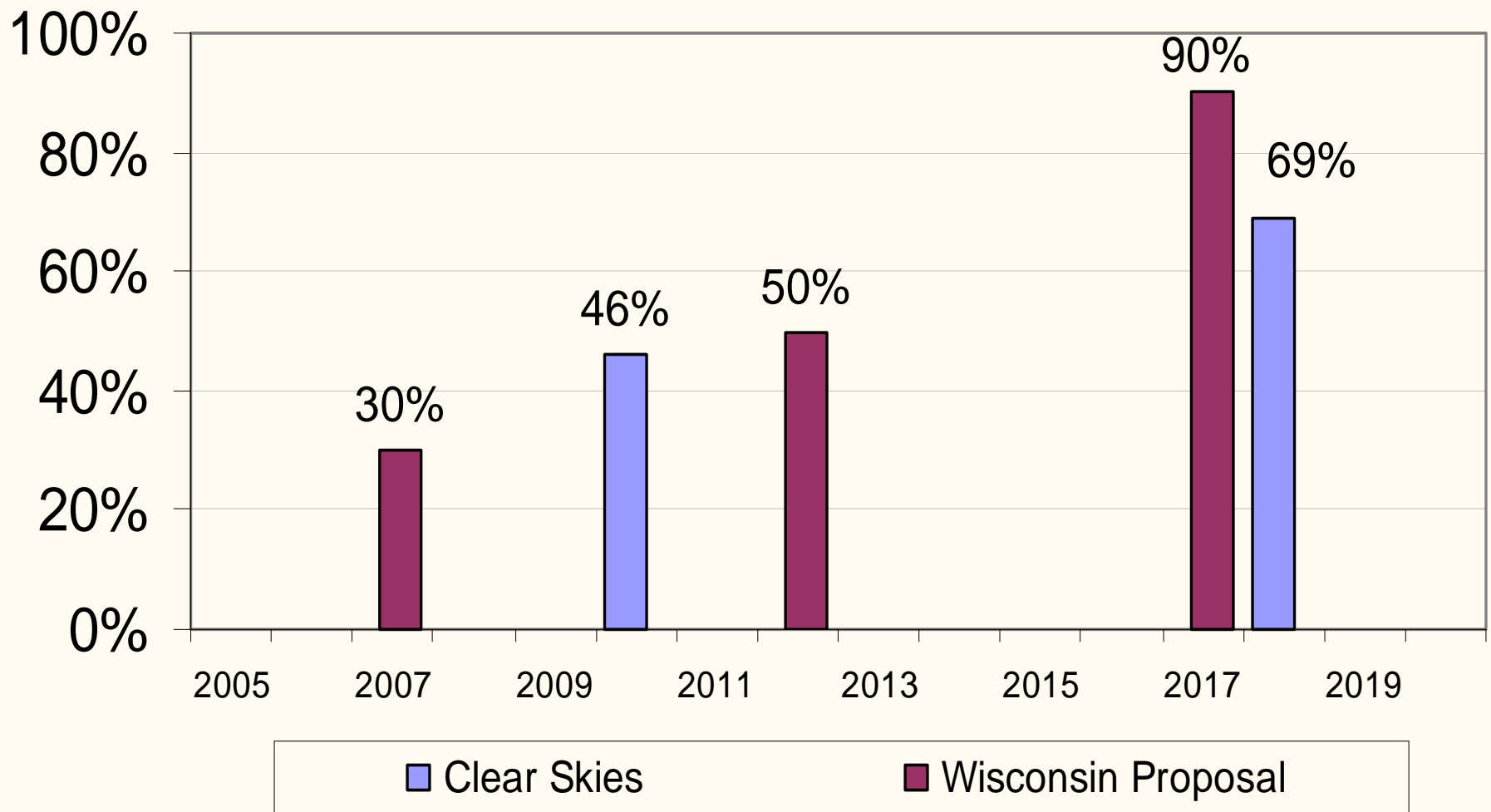
## *Comparison to Federal Actions to Limit Utility Mercury Air Emissions*

- *Federal Actions*

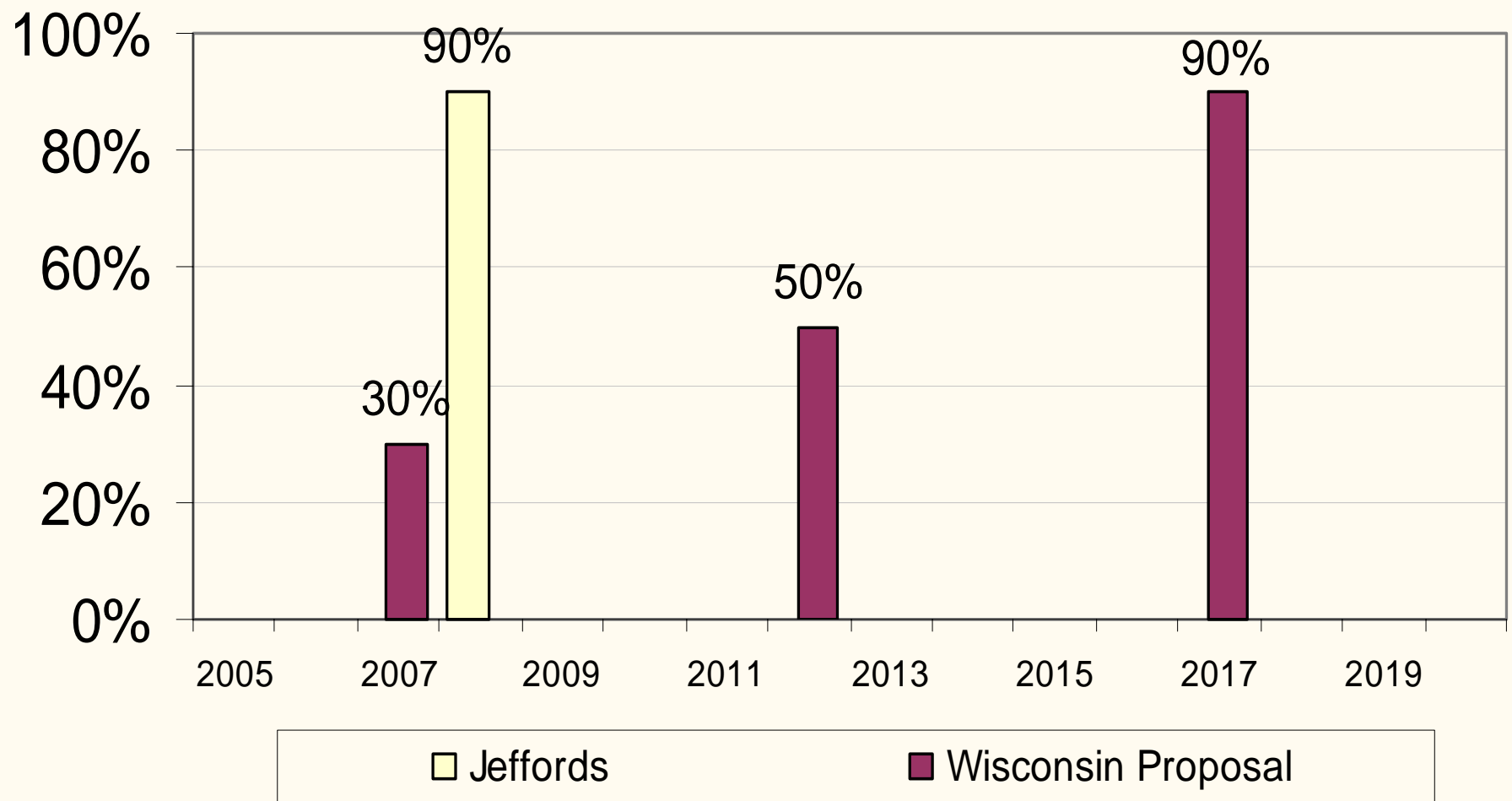
- ⇒ Utility MACT Standard Development
- ⇒ Multi-pollutant Legislative Proposals

- *Comparison to mercury rules  
proposal.*

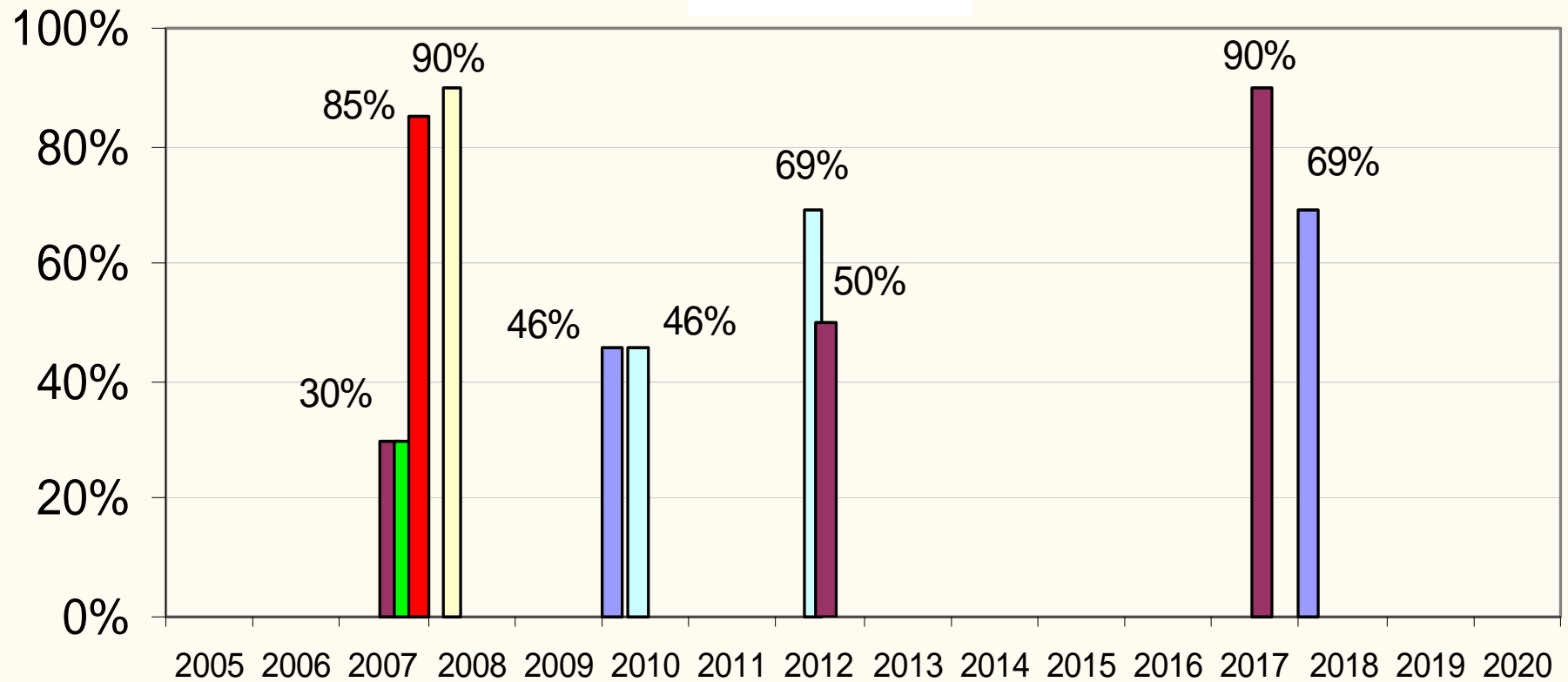
## Clear Skies



## Jeffords



## All Proposals



Clear Skies

Wisconsin Proposal

Jeffords

MACT 30%

Clean Energy Group

MACT 85%